

# New York State Flower Growers

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## What You Should Know About Weed Control

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Weed control chemicals and other agricultural chemicals have received considerable attention lately. In order to adequately feed and clothe the people of this earth it has been necessary to use chemicals to boost agricultural production. The use of these chemicals has been adequately tested for plant and animal tolerance before recommending their use. Most of the recent controversy is due to growers not following the directions on the label. Agricultural chemicals are an integral part of our high level of agricultural production and if used properly greatly increase the farmers' and the florists' ability to raise and sell his products for a profit.

Why are we as florists interested in controlling weeds? Weeds cost us money. Weeds rob the crop plants of their essentials for growth. If they get a head start on the crop, the shadows they cast may seriously reduce the light available to the plants that we are trying to grow. Weeds use large amounts of water and weedy soil dries out faster than clean soil. Weed roots remove nutrients from the soil and consequently crop plants in weedy situations often show signs of lack of fertilizer. When any of the factors important for plant growth are not in an over abundant supply, the weeds can curtail the supply available to the crop plant sufficiently to reduce yield and therefore the dollar return to the grower. This was brought out by some experiments carried out on Long Island this past summer. Gladiolus, cut flower yields from weedy plots averaged 1.6 and 13.4 ounces compared to 42.0 and 51.4 ounces from hand weeded plots. Corn yields were 27.6 and 22.4 ounces compared to 47 and 32.6. There was also a marked decrease in the yield of chrysanthemums: 16 and 14 ounces compared to 22 and 21 ounces. Weeds can also be a nuisance around the greenhouse and especially in the field because they harbor undesirable insects or fungi, and are an indication that the grower lets matters get out of hand. Gladiolus experiments this year showed weedy plots to have not only smaller flowers, but the fewer smaller ones were well eaten by insects.

Removal of growing weeds costs money and is not always easy to do. The weeds may get a head start on flatted seedlings making it unprofitable to even bother cleaning out the weeds. Wet weather may make weeding impossible in some heavy soils. Plants in beds may not be sufficiently accessible for mechanical cultivation. It costs \$300 to \$800 per acre per season to keep azalea beds clean because of the amount of hand labor involved.

Where do weeds come from and why are they hard to

eliminate? Weeds are native or imported plants that are readily adaptable to our cultural practices and grow where we do not want them. Weeds come from seeds or other parts of plants capable of starting new plants. Obviously weedy land will furnish more weed seeds than clean cultivated land. Weeds should be mowed at or before flowering to prevent seed formation. Plowing under old weeds buries the seed and preserves viable seed until it is plowed or cultivated up to the surface again where it can grow when conditions are favorable. Weed seeds can be blown on to clean fields or be carried in by birds, and animals in manure. Man brings them in as mulching or packing materials, impurities in seeds or with transplants. Some weed seeds can remain in the soil for long periods and still be capable of growth when conditions are favorable. Quack grass, nut grass, and chrysanthemum weed are good examples of weeds that are spread by cultivating equipment or by moving plants—they are difficult to eradicate. A field full of any of these persistent weeds would hardly be the place to grow mums or asters.

What methods are available to the florist for controlling weeds? The best method for weed control in the greenhouse and to some extent outdoors is the use of steam to heat the soil to 180°F for 1/2 hour and then plant after the soil has cooled sufficiently. You are well acquainted with the problems involved in steaming ground beds and field soils. Fumigation with methyl bromide gas is very effective in well prepared soil at soil temperatures of over 50°F. Inject 1 pound of gas under the plastic cover for every 100 square feet for weed and nematode control. Rates of 2-4 pounds per 100 square feet are necessary for fungi control. The soil is ready for planting in 2-5 days. Do not use methyl bromide in soils to be used for carnation growing. Chloropicrin can be injected into the warm soil (about 65°) and covered with a water seal, however, it is more efficient if used under plastic. Do not use it in the same house or near live plants. The waiting period is at least 2 weeks. Chloropicrin is primarily good for weed and Verticillium wilt control. Vapam at 1 quart per 100 square feet drenched with 15-50 gallons of water per 100 square feet has given very satisfactory weed control on Long Island. Soil temperatures between 55-80° and a waiting period of 3 weeks or more is necessary. Mylone at 13 pounds of 50% dust per 1000 square feet watered in has given good weed control for some growers. Soil temperatures should be 60-90°F and allow about 3 weeks before planting. With Vapam, chloropicrin, and Mylone

(Continued on page 4)

## Weed Control

*(Continued from page 1)*

allow extra time before planting if the soil is unusually moist or cold.

Last summer plots were treated with 3 rates of Vapam and 3 rates of Mylone with a check plot between the treated plots. After a couple of weeks weed control was excellent. The untreated plot was hand weeded as it was getting out of hand. However a month later the treated plots were loaded with weeds especially a grass that seeded early. Weed seeds must have blown on to the treated strips of land from weeds in the vicinity. This is an exception, but illustrates what can happen.

For field plantings there are many types of machinery available for controlling weeds. The rototiller is probably the best machine for chopping up weeds before planting. A new piece of cultivating equipment that does a good job in keeping crops clean is the Buddingh InRow Weeder. This may have more application for nursery stock than closely planted chrysanthemums. Weeds can be pulled by hand, but for most of us this is very costly.

Chemicals can be used to control weeds. The idea is to apply a chemical at the proper stage of growth of crop and weed so as to kill the weeds without injuring the crop. You are all familiar with the use of 2,4-D to control broadleaved weeds in lawns. It is important to know how the various chemical weed killers work in order to get the maximum weed control with the least chance of crop injury.

It would be well to discuss results of some of the weed control studies on Long Island. The recommendations developed from these experiments and grower experiences are in the 1960 Cornell Recommendations for Florists. For gladiolus, post planting preemergence treatments of diuron (Karmex DW) 1½ lbs. actual/A, dinitro (Premerge, Sinox P. E.) 8 lbs./actual/A, and CIPC 8 lbs. actual/A have given good weed control. EPTC (Eptam) and atrazine have been harmful to glads. Peonies are treated in the late fall or early winter after the foliage has been removed and the soil tilled. The past 2 seasons they have been treated on December 22 and December 24. Diuron at 2-4 pounds and Simazine at 6-10 pounds actual per acre have given very satisfactory results for the entire growing season.

Small scale trials this season show Diuron at 1½ pounds and Simazine at 4-6 pounds per acre give good weed control on dahlias. Simazine granular at 6-8 pounds per acre has been very successful on outdoor plantings of roses. Maybe this has a place for older plantings of roses under glass when oxalis and grasses get out of hand.

Azaleas have fibrous roots close to the soil surface and early experiments showed them to be very sensitive to Sesone (Crag No. 1). However in tests on Long Island Diuron at 1½ pounds and Simazine at 4-6 pounds per acre have looked very promising. In some areas Chloro IPC granular has controlled weeds in azaleas. However, in most of our tests rates sufficient to control weeds have stunted variety Hinodigeri. Simazine looks best on the basis of crop tolerance and the wide variety of weeds controlled.

Trials this year on chrysanthemums, asters, and carna-

tions showed EPTC granular at 4-5 pounds actual per acre to be very effective. Chloro IPC granular at 8 pounds per acre has done well at times depending on the weeds involved. Similar results were obtained on several commercial plantings. Other materials either failed to control weeds, seriously injured the chrysanthemums or both. Where Galinsoga is a problem Chloro IPC is ineffective. Simazine at 2 pounds per acre eliminates asters and chrysanthemums and at higher rates badly damages carnations. Work several years ago showed Sesone to be variable on chrysanthemums. Chloro IPC was used on several varieties of chrysanthemum a few seasons ago with fairly good weed control at 6-8 pounds of actual Chloro IPC per acre. The weights of the plants removed from the plots were variable with some varieties showing reduced weights and others showing no reduction in weight from the check treatment. The reduced growth was not apparent from visual observation.

In the greenhouse, weeds especially Oxalis on Cymbidiums and other orchids have been a problem. Diuron at 2.5 to 5.0 pounds in 100 gallons of water per acre has given good to excellent weed control and no injury on Cymbidiums at rates up to 16 pounds per acre. Broken down to smaller amounts this is  $2\frac{1}{2}$ -5 teaspoons per gallon of water on 400 square feet of bench area. It may be advisable to use more water to do a better job of distributing the chemical and also avoid leaving much of a residue on the foliage. Diuron does not injure orchids, but is not to be used on chrysanthemums. This again illustrates that what is good for one crop is not necessarily safe for another.

All the steaming or fumigating of greenhouse benches or outdoor beds can be a waste of time if oxalis is growing in the walks and shoots seeds onto the benches or beds or if other weeds are growing near the beds and the wind blows the seeds onto the fertile soil in the benches or beds. Control weeds around the greenhouses and outdoor beds especially in the walks. Several materials can be used. For quick results with no residual effect use Stoddards Solvent (carrot oil). For long lasting results, no fumes, on land not to be cropped use diuron (Karmex DW) at 10 lbs./A. A cheap non volatile material is sodium arsenite but it is very toxic to animals. If little children or pets play in or around the greenhouse do not use sodium arsenite.

Of great importance is the storage of herbicides. Volatile materials especially 2,4-D and 2,4,5-T should not be stored in the greenhouse, headhouse or where fumes from leaky cans can affect plants in benches or cuttings in boxes or flats. This has happened this year in commercial greenhouses. All herbicides should be clearly labelled and kept under lock and key to avoid unauthorized or improper use. Read the label before using.